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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/967,174	09/27/2001	Hariprasad Ginipalli	81862P265	5984

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
AHMED, SALMAN	
ART UNIT	**PAPER NUMBER**
2666	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/967,174	GINIPALLI ET AL.	
	Examiner	Art Unit	
	Salman Ahmed	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *27 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-31 and 33-35* is/are rejected.

7)☒ Claim(s) *4,32 and 36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/16/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 5, 6, 12, 13, 16, 20 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Hama (US PAT PUB 2004/0202171).

In regards to claim 5, 12, 20 and 24, a method and an apparatus of maintaining tunnel Labels, comprising: forming a label table that maps different groups of virtual circuit (VC) labels to different group identifications (GIDs), each of the VC labels in a group of VC labels being associated with a common tunnel label; forming a GID table that maps each of the different GIDs to a different tunnel label; and forwarding datagrams using the VC labels in the label table and the tunnel labels in the GID table is anticipated by

(column 7 section 87) the processing steps of a VLAN packet (see FIG. 20) entering the router as an input. A VPN label processor finds the VPN identifier (VPN label), which corresponds to the VID contained in the tag, from the VPN label table. Further, on the basis of the destination MAC address contained in the VLAN packet, a routing table processor obtains the loopback address of the output-side edge router from the L2 VPN routing table and then finds the forwarding label (push label), which corresponds to the above-mentioned loopback address (IP address), from the forwarding label table. If the VPN label and push label have been found, the subrouter swaps the VPN label and forwarding label for the tag to generate an MPLS packet, as shown in FIG. 3, and sends this MPLS packet to the MPLS network via the line card.

In regards to claim 12, 13 and 16, it is known in the art that such routing functionality in a system are implemented by a computer readable medium storing thereon sequences of instructions which are executable by a system.

In regards to claim 20, Hama's teaching shows a router having a processor coupled to a memory (page 7 section 87 and figure 9 numeral 126 and 124, a VPN label processor, a VPN label table). It is known in the art that modules internal to a system communicate via bus connections.

In regards to claims 6 and 13, Hama teaches the structure of a VPN changes from time to time by being enlarged or otherwise modified by the policy of the enterprise. This

makes it necessary to update the VPN tables in conformity with the change in VPN structure. FIGS. 15A and 15B are diagrams useful in describing updating in a case where the user router communicates with another user router.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 3, 21, 25, 26, 27, 28, 29, 30, 31, 33, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171), and

in view of Thang et al. (US PAT PUB 2002/0167898), hereinafter referred to as Thang.

In regards to claims 1, 2, 3, 21, 25, 26, 27, 28, 29, 30, 31, 33, 34 and 35 Hama teaches a method and an apparatus in a multiprotocol label switching (MPLS) network (page 5 section 0070, a mixed network composed of VLANs and an MPLS network), comprising: mapping one or more virtual circuit (VC) labels associated with a first tunnel label to a first group identification (GID); mapping the first GID with the first tunnel label (page 5 section 0073 and 0074, the subrouter refers to table to find the VPN identifier (VPN label) corresponding to the VID contained in the tag. The subrouter further finds the receive-side edge router based upon the destination address contained in the packet and finds the forwarding label, which has been stored in correspondence with the IP address of this edge router, from the MPLS network routing table. If the label is found, the subrouter inserts (swaps) the VPN label and the forwarding label in place of the tag of the packet and sends the MPLS packet to the MPLS network.).

Hama does not teach in regards to claims 1, 3, 21, 25, 26, 27, 31 and 35 forwarding a datagram using a new tunnel label instead of the old tunnel label.

Thang teaches in regards to claims 1, 3, 21, 25, 26, 27, 31 and 35 in page 11 section 0227, the ABR having knowledge of two failures, (one in each connected

area), it must first remove the attached label and swap it with a label from the other restoration table. In regards to claim 28, in section 0229 of page 11 Thang teaches that MPLS fault localization would require few changes. The first change is that all MPLS enabled nodes be able to attach labels to any data that arrives for the purpose of restoration. In this way, the fault need not be propagated to the ingress and egress nodes, but just to those nodes local to the fault. So the next node to the faulted node will process packets in a normal way.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama's teaching by adding label swapping capability during link errors as taught by Thang. The motivation is that it is known in the art to apply automatic protection switching scheme (replacing failed LSP label with a new working LSP label) for network reliability in a MPLS network.

In regards to claim 2, 30 and 34 Hama teaches a VID label being associated with forwarding label.

In regards to claim 29, 30 and 31 Hama's teaching shows a router having a processor coupled to a memory (page 7 section 87 and figure 9 numeral 126 and 124, a VPN label processor, a VPN label table). It is known in the art that modules internal to a system communicate via bus connections.

In regards to claims 21, 33, 34 and 35 it is known in the art that routing functionality in a system are implemented by a computer readable medium storing thereon sequences of instructions, which are executable, by a system.

6. Claims 7, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171), and in view of Enoki et al. (US PAT PUB 2001/0033574), hereinafter referred to as Enoki.

In regards to claims 7 and 14 Hama teaches the structure of a VPN changes from time to time by being enlarged or otherwise modified by the policy of the enterprise. This makes it necessary to update the VPN tables in conformity with the change in VPN structure. FIGS. 15A and 15B are diagrams useful in describing updating in a case where the user router communicates with another user router as described in the rejections of claims 5 and 12.

In regards to claims 7 and 14 Hama does not teach of updating the label with a new label in a table.

In regards to claims 7 and 14 Enoki teaches (page 6 section 0132) that in order to manage the association between labels and FECs, the MPLS processing section holds a label-to-FEC mapping table in the memory and updates this table on the

basis of the result of label allocation by the label management section. The contents of the label-to-FEC mapping table of the LSR are as depicted in FIG. 17.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama's teaching to incorporate Enoki's teaching of label updating in a label type table. The motivation is that in order to expedite rerouting of packets, correct labels need to be in place at the earliest in a routing label type table.

7. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171), and in view of Paatela et al. (US PAT PUB 2002/0163935), hereinafter referred to as Paatela.

In regards to claims 8 and 15 Hama teaches of routing packets using labels as described in the rejections of claims 5 and 12.

In regards to claims 8 and 15, Hama does not teach of using updated label instead of the old label to forward packets.

In regards to claims 8 and 15, Paatels teaches MPLS uses a stack of 32-bit labels, and a router will view the top label in the stack to determine what the next hop should be. Each router in the MPLS domain can modify the label stack, such as by

adding more labels based on the router's knowledge of the packet forwarding conditions. For example, such a modification may require replacing the existing top label on the label stack with a new label so that a particular router can change one or more of the next hops.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama's teaching by incorporating the steps of using updated label for routing during routing change. The motivation is that link can go down any moment of time and the labels need to be updated to reroute the packets. Then the updated label has to be used to forward the packet.

8. Claims 9, 10, 11, 17, 18, 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171), and in view of Cao et al. (US 6721269), hereinafter referred to as Cao.

In regards to claims 9, 10, 11, 17, 18, 19, 22 and 23, Hama teaches of routing packets using labels as described in the rejections of claims 5 and 12.

In regards to claims 9, 10, 11, 17, 18, 19, 22 and 23, Hama does not teach of using an indicator telling the router to use backup label for routing during link error.

In regards to claims 9, 10, 11, 17, 18, 19, 22 and 23, Cao teaches (column 9 lines 55-66 and column 10 lines 59-65) that label information base includes an ERLSP ID, which provides a unique ID for the associated flow, an incoming label, forwarding equivalence class identifier, outgoing label, next hop, outgoing interface and protection status are also included. The protection status may take on a value of 0, 1, 2, or 3, respectively corresponding to "unprotected", "protected", "active", and "backup". If the ERLSP was protected, the LSRS will change the protection status of the ERLSP from 1 to 0. That is, at this stage, the protected flow, also referred to as the backup or secondary flow, is used as the active flow. At the ingress router, also referred to as a source node, the egress node, will determine whether the failed ERLSP is protected. If it is protected, the LSR will change the protection status of the failed ERLSP from 3 to 0. By modifying the protection status, changing the protection status of the ERLSP from "backup" to "unprotected", the egress LSR completes the hardware protection switching, i.e. it will work as a normal node in processing packets.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama's teaching by incorporating protection status column in label tables as taught by Cao. The motivation is that in a packet-processing environment, if a link is down, it is not required to re-calculate and updated routing info for every packet. Instead, an indication should be set and subsequently used to route packets without doing path re-calculation.

Allowable Subject Matter

9. Claims 4, 32 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Prior arts pertinent to the application but not used in the office action:

- Method of and apparatus for fast alternate-path rerouting of labeled data packets normally routed over a predetermined primary label switched path upon failure or congestion in the primary path Haskin et al. US 6813242

- Path rerouting mechanism utilizing multiple link bandwidth allocations Shabtay et al. US 6895441

- Method of managing hop-count in label switching network Katsube et al. US 6501756

- Label switched communication network, a method of conditioning the network and a method of data transmission Carpini et al. US 20030043792

- Online distributed path routing method and system Su et al. US 6850705

- Method for high speed rerouting in multi protocol label switching network Lee et al. US 6904018

- Network data routing protection cycles for automatic protection switching Andersso et al. US 20030152025

- Link-level protection of traffic in a packet-switched network Wang et al. US 6901048

- Constraint-based route selection using biased cost Hsu US 6363319

- Failure protection in a communications network Weil et al. US 20020093954

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Salman Ahmed
Examiner
Art Unit 2666

SA

DANG TON
PRIMARY EXAMINER